REMARKS

Claims 1, 119, 122, 272, 309, 319, 320, and 368 are amended for clarification purposes and, thus, no new subject matter has been added thereto. In the present response, claims 65-66 are canceled without prejudice or disclaimer. Claims 393 and 394 are added. Claims 1, 15-27, 65-67, 72-75, 79-89, 94-100, 102, 110-119, 121-135, 180-182, 217, 219-242, 251-255, 272, 309, 319-321, 323, 324, 326, 327, 343-356, 360-362, 365-373, 376-385, and 389-394 are currently pending in the case. Further examination and reconsideration of the presently claimed application are respectfully requested.

Support for the revisions to claims 1, 119, 122, 272, 309, 319, 320, and 368 may be found in the specification, for example, at ¶¶ 0022, 0048. Support for claims 393 and 394 may be found in the specification and claims as filed, including ¶ 0140 at lines 1-7; ¶ 0385 at the last sentence; ¶ 0487],lines 5-7; Examples 1-14, and ¶¶ 0022, 0048, 0085.

The Examiner did not list claim 360 as pending, but lists this claim as being rejected. Applicant surmises the failure to list the claim as pending was inadvertent, unless Examiner provides a differing reason.

The Examiner withdrew claims 69-71 from further consideration pursuant to 37 CFR 1.142(b) as being drawn to non-elected inventions. Applicant notes that claims 69-71 were restricted as part of the Invention I, and enzyme classification (A) EC 3.1.8.1 - aryldialkylphosphatase/organophosphorus hydrolase, both of which Applicant provisionally elected without traverse in the document dated January 30, 2009. Applicant respectfully requests that these claims be reinstated for consideration, or please provide clarification as to how these claims are not-generic to the provisional election, per MPEP.821(R3): "The examiner should clearly set forth in the Office action the reasons why the claims withdrawn from consideration are not readable on the elected invention."

The Examiner stated at page 2 of the Office Action mailed March 27, 2009 that "It is acknowledged that, with the response of January 30, 2009, Applicants have affirmed their

election of an aqueous paint comprising an organophosphorus hydrolase…" Applicant wishes to clarify that the Applicant provisionally elected in the document dated January 30, 2009, "a paint comprising an esterase of EC 3.1.8."

Objection to the Claims

Claims 1, 15-27, 65-67, 72-75, 79-89, 94-100, 102, 110-119, 121-135, 180-182, 217, 219-242, 251-255, 272, 309, 319-321, 323, 324, 326, 327, 343-356, 360-362, 365-373, 376-385 and 389-392 have been objected to for reciting non-elected subject matter. Applicant respectively traverses the Examiner's objection to the claims. The Examiner fails to provide any explanation as to why she objects to all the non-withdrawn claims for reciting non-elected subject matter. Applicant challenges the Examiner's assertion that elected claims may not recite non-elected subject matter. It is Applicants understanding that it is not improper to have the claims in a form that includes both elected and non-elected subject matter. If Examiner disagrees, Applicant respectfully requests a citation of a rule that states that such an objection is proper. Without such support, removal of the objection to claims 1, 15-27, 65-67, 72-75, 79-89, 94-100, 102, 110-119, 121-135, 180-182, 217, 219-242, 251-255, 272, 309, 319-321, 323, 324, 326, 327, 343-356, 360-362, 365-373, 376-385 and 389-392 is respectfully requested.

Section 112, 1st Paragraph, Rejections

Claims 1, 15-27, 65-67, 72-75, 79-89, 94-100, 102, 110-119, 121-135, 180-182, 217, 219-242, 251-255, 272, 309, 319-321, 323, 324, 326, 327, 343-356, 360-362, 365-373, 376-385 and 389-392 were rejected under 35 U.S.C. § 112, first paragraph, for the specification failing to provide enablement for the subject matter of the claims. In addition, such claims were further rejected under 35 U.S.C. § 112, first paragraph, for containing subject matter which was not described in the specification in such a way to reasonably convey to one skilled in the art that the inventors had possession of the claimed invention. As set forth below, the rejections are traversed, and the previous arguments made by Applicant are maintained.

In the present Office Action at pages 4 and 6, the Examiner acknowledges enablement of the organophosphorous hydrolase as described in Examples 3-5 and the fillers as described in Example 14. As stated at page 4:

> . . . the specification, while being enabling for the paints comprising an organophosphorus hydrolase as described in Examples 3-5, does not reasonably provide enablement for paints comprising any protein having any structure, and having any organophosphorus hydrolase activity as well as any thermoplastic binder, any filler, and any bactericide preservative . . .

And as stated at page 6 of the present Office Action: "However, in this case, the disclosure is limited to the organophosphorous hydrolase as described in Examples 3-5, and the fillers disclosed in Example 14."

Applicant appreciates this acknowledgement of enablement by the Examiner, but Applicant respectfully disagrees that enablement is so limited.

The Examiner sets forth 17 reasons (A-Q) on pages 8 and 9 of the Office Action as to why the Examiner considers the specification not enabling for the presenting pending claims, summarized as follows:

(A) all proteins having the desired organophosphorus hydrolase activity;
(B) regions of the protein structure which may be modified without affecting the organophosphorus hydrolase activity;
(C) the general tolerance of the organophosphorus hydrolase activity to modification and extent of such tolerance;
(D) a rational and predictable scheme for modifying any residues with an expectation of obtaining the desired biological function;
(E) the structure of all compounds/compositions having the desired thermoplastic binder activity, filler activity, or bactericide preservative activity;
(F) regions of the compound/composition structure that may be modified without affecting the desired activities;
(G) the general tolerance of the desired activities to modification of the compound/composition structure and extent of such tolerance;
(H) a rational and predictable scheme for modifying any compound/composition with an expectation of obtaining the desired biological function;
(I) the structure/composition of all paints forming a solid film of certain thickness by loss of a volatile component under ambient conditions
(J) the structure/composition of all paints forming a temporary film;

(K) the structure/composition of all paints effective as a coating on a wide variety of surfaces;
(L) the structure/composition of all paints having a specific range of densities;
(M) the structure/composition of all paints that are corrosion resistant;
(N) how the structure/composition of any paint may, or may not be altered, and still retain the desired activity to form a solid film of a certain thickness by loss of a volatile component under ambient conditions, form a temporary film, be effective as a coating on a wide variety of surfaces, having a specific range of densities, and being corrosion resistant;
(O) the general tolerance of the structure/composition of any paint to modification and extent of such tolerance to maintaining the characteristics listed in (N);
(P) a rational and predictable scheme for modifying the structure/composition of any paint while still maintaining the characteristics listing in (N) and (Q);
(Q) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful.

Further, at page 9, Examiner states: "Without sufficient guidance, determination of the identity of paints having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue."

On pages 6 of the Office Action, the Examiner additionally states:

> While methods for altering the structure of proteins and compounds, as well as methods for testing proteins for organophosphorus hydrolase activity and compounds for activity as a thermoplastic binder, a filler, or a bactericide preservative are known in the art, it is not routine in the art to screen an essentially unlimited number of proteins and compounds for the desired activities.

Applicant concurs that methods for altering the structure of proteins and compounds, and testing for organophosphorous hydrolase activity, thermoplastic binder activity, filler activity, and bactericide preservative activity are known in the art, and further asserts such methods are disclosed as well in the instant application, enabling the practice of the invention without undue experimentation beyond Examples 3-5 and 14 to the full scope of the claims, as described below.

Examiner's points (A) to (D), and point (Q) as related to points (A) to (D), were addressed in the prior arguments filed August 27, 2008. In the current Office Action, Examiner

summarizes Applicant's prior arguments, and states that Applicant's argument (A) is unclear. Applicant apologizes for incorrectly citing the Office Action mailed May 18, 2007 at page 6, lines 5-6 in prior argument (A), where the correct citations was at page 6, last 2 lines to page 7, lines 1-2, stating the Examiner's position regarding the enablement of the specification as:

> The specification may be enabling for a broader scope of coatings than just a paint comprising enzymatically active organophospho-hydrolase. However, for the reasons stated in the prior action and in (A) above, the specification if not enabling for the full scope of the recited invention.

In light of the previous agreement by the Examiner of broader enablement of coatings and enzymes other than a paint comprising an organophospho-hydrolase, Applicant finds the current rejection an inappropriate and unsupportable reversal regarding the enablement of the specification, particularly in regards to points (E) to (Q) in the current Office Action as they relate to coatings and paints. Applicant asserts that how to make and use a coating such as a paint is a well-developed art, and the specification further provides ample direction and guidance to those of skill in the art on production a coating, as well as selection and incorporation of standard coating components such as thermoplastic binders, fillers and bactericide preservatives, to produce a coating with the properties cited in points (E) to (Q) (e.g, corrosion resistant, temporary film, of a certain density, etc), as well as provides direction and guidance on combining coating components and/or prepared coatings with an enzyme or other biomolecular composition to produce an coating with an enzyme. For example, ¶¶ 0321-0450, 0490, 0560-0570, 0574-0584, 0622-0635, and 0647-0664 describe the preparation and use of various thermoplastic binders, fillers, and bactericide preservatives, the preparation and use of coatings (e.g., corrosion resistant coatings, coatings on various surfaces, volatile component loss, etc.) comprising such materials and the enzymes of the instant claims, and numerous assays for various binders, fillers, and bactericides' activity. In addition, ¶¶ 0293, 0302, 0309, 0310, 0313, 0316, 0377, 0391, 0396, 0400, 0415, 0427, 0439 and 0565 provide direction and guidance regarding preparation of corrosion resistant coatings, including selection of corrosion resistant binders and fillers. Guidance in the preparation of a coating having a certain density, thickness, adherence, and loss of a volatile compound under ambient conditions is provided, for example, at ¶¶ 0290, 0647, 0316, 0654, 0655, 0662, 0413, 0414, 0426, 0427, 0438, 0288, 0451,

0487, 0652 and 0654. The Examiner also states additional points related to coatings at page 5 not dealt with in points (E) to (Q) above: "The claims further encompass one or more of the following:…(x) the coating is self-cleaning." Again, the specification is fully enabling for the breadth of the claims related to this embodiment, as descriptions of preparing and using a self-cleaning (chalking) coating are found at, for example, at ¶¶ 0273, 0274, 0333, 0363, 0369, 0373, 0378, 0386, 0390, 0399, 0405, 0409, 0414, 0428, 0435, 0438, 0442, 0444, 0449, 0675, 0652, and 0660. Further, the specification provides guidance on combining coating components or a prepared coating with an enzyme or other biomolecular composition to produce a coating with an enzyme, as described at ¶¶ 0241-0263, 0622-0646, and Examples 1-8, 11, and 19.

The Examiner's reply to previous argument (B) that "the scope of the proteins…is even broader than the scope encompassed by any organophosphorus hydrolase" is refuted by Applicant, based on the past agreement by the Examiner of broader scope at the Office Action mailed May 18, 2007, and the disclosures of specification supporting such scope as described herein and in prior filed documents.

In reply to Applicant's previous arguments (C), (D), (E), (F), (G), (H), and (I) the Examiner acknowledges the specification describes the activity of enzymes encompassed within EC 3.1.8, including "organophosphorous hydrolase," the teachings of Pseudomonas organophosphorus hydrolase crystal structure; techniques for "identification of residues important for the desired activities," "positions number" of residues involved in divalent metal ion binding, nucleophilic attack, and possible substrate binding; exemplary but not defined conservative substitutions; methods for chemical modification of proteins and identification of active fragments; and substitution of various histidine residues in an OPH; some substitution in a paroxonase or DFPase. Applicant appreciates these acknowledgements by the Examiner, and further argues that these and the other disclosures presented in the specification demonstrate 1) an ample "amount of direction and guidance," a consideration in determining enablement [(In re Wands, 858 f.d2 731, 8 USPQ2nd 1400 (Fed. Cir. 1988)]. These disclosures, and others that will be referenced below, coupled with other In re Wands factors such as: 2) the relative skill of those in the art, which Applicant asserts as being very high as related to coating and active enzyme production and alterations that produce active enzyme variants; 3) the presence of

working examples, which the Examiner has already acknowledged some (i.e.., Examples 3-5), but not others (see, for example, Examples 1-2, 6, 7, and 19); and 4) the quantity of experimentation necessary, which Applicant argues as not being undue because of the ability of those of skilled in the art to readily prepare coatings and discern enzyme activity by assays described in the specification as well as those known in the art; support the enablement of the claimed invention. In regard to the quantity of experimentation necessary, Applicant draws the Examiner's attention to MPEP 2164.06, which describes in part:

> In the chemical arts, the guidance and ease in carrying out an assay to achieve the claimed objectives may be an issue to be considered in determining the quantity of experimentation needed. For example, if a very difficult and time consuming assay is needed to identify a compound within the scope of a claim, then this great quantity of experimentation should be considered in the overall analysis. Time and difficulty of experiments are not determinative if they are merely routine.

Additionally, the specification also clarifies that techniques may be used that do not require prior identification of specific residues as part of experimentation to produce and screen for active enzymes for use in the claimed invention, as described in ¶ 0181:

> It is also possible to produce a mutant enzyme with an enhanced enzymatic property against a specific substrate by evolutionary selection rather than rational design. Such techniques can screen hundreds or thousands of mutants for enhanced cleavage rates against a specific substrate. The mutants identified may possess substitutions at amino acids that have not been identified as directly comprising the active site, or its binding subsites, using techniques such as NMR, X-ray crystallography and computer structure analysis, but still contribute to activity for one or more substrates. For example, selection of OPH mutants based upon enhanced cleavage of methyl parathion identified the A80V/S365P, L182S/V310A, I274N, H257Y, H257Y/I274N/S365P, L130M/H257Y/I274N, and A14T/A80V/L185R/H257Y/I274N mutants as having enhanced activity. Amino acids Ile274 and Val310 are within 10Å of the active site, though not originally identified as part of the active site from X-ray and computer structure analysis. However, mutants with substitutions at these amino acids demonstrated improved activity, with mutants comprising the I274N and H257Y substitutions particularly active against methyl parathion.

The specification describes various assays for organophosphorous hydrolase activity at ¶¶ 0636-0646 that are routine in the art to conduct, and in particular, Example 19 describes a simple assay for paroxonase activity using standard laboratory equipment (e.g., a U.V.

Spectrophotometer, cuvettes, buffered solutions, dowels), paraoxon, and a sample of a biomolecular composition that may comprise an active paraoxonase, to readily determine enzyme activity. Examples 1, 4 also describe a visible colometric assay and a visible fruit fly survival assay for determining whether a biomolecular composition or a coating comprising a biomolecular composition possesses phosphoric triester hydrolase (EC 3.1.8) activity. These assays are applicable in screening phosphoric triester hydrolases, whether altered or not, or a material comprising such enzyme(s), for activity. Further, the Examiner states additional points at page 5, which includes: "The claims further encompass one or more of the following:…the organophosphorus hydrolase activity is retained for up to a year after surface application." Such assays are applicable in routine testing for activity as well over a year or more after creation and/or application (e.g., film formation) of a coating. Applicants submit these rapidly and readily conducted assays, which include assays using visual determination of enzyme activity, and others disclosed in the speciation, are as routine as is possible in the art, particularly when compared to the "Example of Reasonable Experimentation" described at MPEP 2164.06:

> In *United States v. Telectronics, Inc.*, 857 F.2d 778, 8 USPQ2d 1217 (Fed. Cir. 1988), cert. denied, 490 U.S. 1046 (1989), the court reversed the findings of the district court for lack of clear and convincing proof that undue experimentation was needed. The court ruled that since one embodiment (stainless steel electrodes) and the method to determine dose/response was set forth in the specification, the specification was enabling. The question of time and expense of such studies, approximately $50,000 and 6-12 months standing alone, failed to show undue experimentation.

The Examiner also argues in reply to the Applicant's argument (H) that experimentation would be undue to functional limitations of (i) binds to a living organism, (ii) the activity is retained for up to a year after surface application, (iii) the organophosphorus hydrolase cleaves any chemical warfare agent and/or any pesticide, and (iv) the organophosphorous hydrolase cleaves multiple chemical warfare agents and/or multiple pesticides. In regards to (i), Applicant has canceled claims 65-66 merely to forward the case to allowance. Applicant has addressed (ii) above. In regards to (iii) to (iv), Applicant asserts that as part of the definition of enzyme activity EC 3.1.8 is the cleavage of one or more organophosphorous chemical specie, often one or more specie of organophosphorus chemical warfare agent(s) and/or pesticide(s). Enablement

of the independent claims would be established by cleavage of such a specie, using an assay described in the specification or the art. Further, the enzymes of EC 3.1.8 often cleave numerous specie of organophosphorous compounds, presumably due to the similarity of structure which is used to define a chemical as belonging to the "organophosphous" class of chemicals. For example, see ¶ 0140 wherein numerous genus and specie cleavable by organophosphorous hydrolase are included in the various alternative names for this enzyme (e.g., "phosphotriesterase," "parathion hydrolase," "VXase," "sarinase," etc.), as the art typically initially refers to an enzyme by the genus or specie of a substrate the enzyme acted upon in an assay to classify the enzyme. Similarly, ¶¶ 0145, 0150, 0152 and Table 4 also describe examples of chemical genera and/or specie cleavable by those particular enzymes, providing sufficient guidance to enable the creation of coatings and surface treatments with such readily assayable activities to enable the full breadth of the claims.

The Examiner argues at page 6 and throughout the rejections under 35 U.S.C. § 112, first paragraph, summarized herein, that the claims are not enabled or indefinite in regards to knowledge of and guidance to various amino acid positions and structure, such as those that are tolerant of modification, and due to a lack of "specific sequence" in the replies to Applicant's previous arguments "position numbers are indefinite," that the "art teaches that the relationship between the structure and function of OPH proteins remains unpredictable," and "the specification fails to provide the public with the structures of all the encompassed proteins, which includes recombinant proteins that are sequence or structural analogs." As argued in the prior responses, Applicant has cited numerous specific residues that may be modified, for embodiments wherein site directed alterations are desired (see, for example, ¶¶ 0154-0191 and 0194-0240 regarding altering structure of proteins). But, as argued previously and herein, the Examiner's position that one must have knowledge and guidance of an amino acid that may be altered is incorrect, as an enzyme may be modified and hundreds or thousands of possible variants assayed without such knowledge and guidance of the specific residues that are altered, and in fact, such techniques are used to screen to identify the specific residues that contribute to activity. Or in other words, alterations may be readily made, including, for example evolutionary selection as described at ¶ 0181 and/or chemical modifications described at ¶¶ 0159 and 0160, and assays used to readily identify active variants, followed by determination of

specific residues that influence activity – that the specification and the art uses the reverse procedure as argued by the Examiner to produce active variant enzymes. Techniques for such alterations and assays are described in the specification as cited above, and in prior arguments, and that the amount of experimentation is routine given the techniques and assays that are used, as described herein above and previously.

Further, the Examiner has not met the burden to show that the claims are not adequately described or lack of enablement due to a "lack of specific sequence." This argument by the Examiner is incorrect as a standard for the written description requirement, and consequentially, enablement. The disclosure as originally filed need not provide "in haec verba support for the claimed subject matter at issue," Purdue Pharma L.P. v. Faulding Pharmaceutical Co., 230 F.3d 1320, USPQ2d 1481, 1483 (Fed. Cir. 2000). In Capon v. Eshhar, 418 F.3d at 1349, 1358, 76 USPQ2d at 1084, the Federal Circuit held that the Board of Patent Appeals and Interferences (BPAI):

> erred in ruling that § 112 imposes a per se rule requiring recitation in the specification of the nucleotide sequence of the claimed DNA, when that sequence is already known in the field. at 1349
>
> The Board erred in holding that the specifications do not meet the written description requirement because they do not reiterate the structure or formula or chemical name for the nucleotide sequences of the claimed chimeric genes. at 1358

In *Invitrogen Corp. v. Clontech Laboratories, Inc.*, 429 F.3d 1052, 1073 (Fed. Cir. 2005) the court upheld a district court decision that claims to a polypeptide encoded by a modified reverse transcriptase nucleotide sequence were not invalid under the written description requirement, even though the claims were not limited to sequences recited in the specification.

Applicant holds that the claims are not indefinite in light of the specification's written description of enzymes in the art, and that this description supports the enablement of the claims. As described in *Lizard Tech Inc., v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1343, 76 USPQ2d 1724, 1732 (Fed. Cir. 2005):

> a recitation of how to make and use an invention across the full breadth of the claim is ordinarily sufficient to demonstrate that the inventor possesses the full scope of the invention and vice versa. (emphasis added).

Applicant in previously submitted arguments and herein above directs the Examiner to specifically cited paragraphs and sections of the specification, and the disclosure of the specification in general as filed, provide both more than sufficient description of coatings, coating components such as thermoplastic binders, fillers, and bactericide preservatives, and enzymes and their use to amply teach how to make and use the full scope of the claims beyond the specific Examples 3-5 and 14 presently acknowledged as enabled by the Examiner.

However, merely to forward the case, Applicants have added independent claims 393 and 394 with alternative language for Examiner's consideration. Applicants have also included a copy of the Materials Data Sheet ("MDS") of the paint used in Example 3-5 as Exhibit A for reference to the binder(s), filler(s) and biocide preservative(s) that are described as components of this paint. Note that a specific biocide preservative is not listed, and Applicant understands that it is common practice not to list various minor components (e.g., additives such as a preservative) in a coating's MDS.

For at least the reasons cited above, it is asserted that the specification enables one skilled in the art to make and use the limitations of the present claims. In addition, it is asserted that the specification conveys to one skilled in the art that the inventor had possession of the claimed subject matter and, therefore, the written description requirement is satisfied for the present claims. Accordingly, removal of 35 U.S.C. § 112, first paragraph rejections of the claims is respectfully requested.

Section 103 Rejections

Claims 1, 15-27, 65-67, 72-75, 79-89, 94-100, 102,110-119, 121-135, 180-182, 217, 219-242, 251-255, 272, 309, 319-321, 323, 324, 326, 327, 343-356, 360-362, 365-373, 376-385, and 389-392 were rejected under 35 U.S.C. § 103(a) as being unpatentable over by U.S. Patent No. 5,998,200 to Bonaventura et al. (hereinafter referred to as "Bonaventura") in view of a

paper entitled "*Alteromonas* prolidase for organophosphorus G-agent decontamination," by Cheng et al. (hereinafter referred to as "Cheng"). The Examiner summarizes the rejection as follows:

> Bonaventura et al teaches paint comprising a variety of enzymes (Example 1). Bonaventura et al do not teach a paint comprising an organophosphorus hydrolase. Cheng et al teaches a variety of liquid compositions comprising an Altermonas organophosphrus hydolase. It would have been obvious to a person of ordinary skill in the art to modify the paints of Bonaventura et al by incorporating the organophosphorus hydrolase of Cheng et al. Motivation to do so derives from the desire to treat a surface for organophosphates, known as toxic agents. Such treatment would be especially advantageous for surfaces used in the making and using of pesticides, which comprise organophosphates. The expectation of success is high, as paints comprising enzymes are known in the art and the organophosporus hydrolase of Cheng et al is active in a variety of compositions (Examples 4-7).

The Examiner failed to respond in any detail as to Applicant's prior arguments filed August 27, 2008 regarding this rejection. Applicant maintains the arguments, in part as reiterated below, previously filed regarding this rejection.

Applicant, while reviewing Bonaventura, found mention of a hydrolytic enzyme that cleaves parathion in a mixture of a hydrophillic polyurethane and a paint, at Example V, column 34 line 35 – column 35, line 27. Merely to forward the case, Applicant has amended the claims as noted earlier and provides these arguments for Examiner's consideration.

To establish a *prima facie* obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974), MPEP 2143.03. Obviousness cannot be established by combining or modifying the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion or incentive to do so. *In re Bond,* 910 F. 2d 81, 834, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990).

Bonaventura and Cheng, taken alone or in combination, do not disclose all limitations of the pending claims, some distinctive limitations of which are set forth in more detail below.

Bonaventura does not teach, suggest or provide motivation to create a non-marine coating or paint, that is, Bonaventura does not teach, suggest or provide any motivation to create a composition for use other than one in contact with an aquatic environment for an antifouling purpose.

Bonaventura teaches a manner of preventing fouling of an aquatic apparatus by an organism through affixing a biologically active chemical to the surface of the apparatus intended for contact with the aquatic environment. As noted in the Abstract of Bonaventura (shown below), a surface affixed with a biologically active chemical is intended for used in contact with an aquatic environment:

> "A method for preventing fouling of an aquatic apparatus by an aquatic organism which comprises affixing a biologically active chemical to a surface *intended for use in contact with an aquatic environment* containing the organism, wherein the chemical is an enzyme, repellant, chelating agent, enzyme inhibitor, or non-metallic toxicant capable of hindering the attachment of the organism to the surface while affixed to the surface, is disclosed along with improved apparatuses which are produced using the method." (Emphasis added)

Bonaventura again describes the purpose of the compositions to be in "contact with an aquatic environment" for "preventing fouling," for example, at the "Summary of the Invention," column 2, lines 13-15:

> "This and other objects of the invention as will hereinafter become more readily apparent have been accomplished by providing a method for preventing fouling of an aquatic apparatus by an aquatic organism which comprises affixing biologically active chemicals to a surface *intended for use in contact with an aquatic environment* containing said organism wherein said chemicals possess anti-fouling properties in a bound state." (Emphasis added)

Bonaventura further describes the function of the invention at column 11, lines 54-60:

> "Surfaces which can be protected using the method of the invention include ship hulls, pilings, glass and other transparent observation windows, sonar domes, water-conducting pipes, cooling towers and ponds, pumps, valves, filtration members and all other aquatic apparatuses which have surfaces which come into contact with *aquatic environments containing fouling organisms*." (Emphasis added)

Applicant asserts that it would not be obvious to one skilled in the art to modify the paint described in Bonaventura formulated for use in contact with an aqueous environment for an antifouling property into another type of paint that is formulated to be suitable for a purpose of use in other environments, and with an accordingly reduced or lacking antifouling property. In response to an argument in the preceding Office Action mailed February 27, 2008, the Examiner acknowledges the specific objective and function of the enzymes described in Bonaventua, but surmises "how the paints of Bonventura are to be used is irrelevant to the instant rejection …" (preceding Office Action, page 9). Applicant strongly disagrees. Ascertaining the differences between the prior art and the claims at issue requires interpreting the claim language, and considering both the invention and the prior art references as a whole. MPEP 2141.02 (underline added for emphasis). Applicant finds that Bonaventura as a whole is directed to materials suitable for a marine/aquatic environment that incorporate antifouling agents for a purpose of protecting surfaces that contact aquatic, fouling environments. As described at M.P.E.P. 2143.01 R-6] V:

> If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

Further, Applicant asserts that the present claims are non-obvious over Bonaventura, as there is no reasonable expectation of success for prolonged use of a hydrolytic enzyme, which uses a water molecule to catalyze cleavage of a chemical bond, in a material not hydrated by continuous or near continuous contact with an aqueous medium. A freeze dried hydrolytic enzyme is non-functional, and an inhibition of function would also be expected in a coating not continuously or near continuously hydrated by contact with an aqueous medium. As described at the MPEP at 2143.03:

> Evidence showing there was no reasonable expectation of success may support a conclusion of nonobviousness. In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) (Claims directed to a method for the commercial scale production of polyesters in the presence of a solvent at superatmospheric pressure were rejected as obvious over a reference which taught the claimed method at atmospheric pressure in view of a reference which taught the claimed process except for the presence of a solvent. The court reversed, finding there was no

reasonable expectation that a process combining the prior art steps could be successfully scaled up in view of unchallenged evidence showing that the prior art processes individually could not be commercially scaled up successfully.) (emphasis added)

The marine coatings of Bonaventura are used in contact with an aqueous medium, and that allows full hydration of the marine coating. There is no reasonable expectation of success that another coating formulation for use in another environment comprising a hydrolytic enzyme would retain enzyme activity, without the full hydration of the coating by continuous or near continuous contact with an aqueous medium maintaining enzyme function.

Bonaventura and Cheng, taken alone or in combination, do not teach, suggest or provide motivation to create a non-marine coating or paint with an enzymatically active organophosphorus hydrolase that is classified in an enzyme subclass designated by enzyme commission number EC 3.1.8.

An object of a marine coating having an antifouling function for use in contact with an aqueous medium taught by Bonaventura is completely different from the non-coating materials to detoxify OP compounds taught by Cheng. A marine coating for a particular function within an aqueous medium does not necessarily render a different type of material configured for a completely different function compatible, much less effective, in the same medium. **The various compositions of Cheng would be immediately or rapidly <u>obliterated</u> by contact, let alone continuous or near continuous contact with an aqueous medium and/or a fouling (i.e., fouling organism containing) medium due to biodegradation.** See, for example, the title of Table 2, page 460: "Effects of Altermonas sp.JD6.5 enzyme in the presence or absence (control) of various **<u>biodegradable and water soluble wetting agents or foams</u>**" (Emphasis added.)

The Applicant asserts that Bonaventura and Cheng are non-combinable, as they teach materials that are completely unsuitable for each others' purposes, with the former teaching materials being able to function in contact with an aqueous medium, and the latter teaching

materials soluble in water and thus dispersed and destroyed upon contact with an aqueous medium.

Bonaventura and Cheng, taken alone or in combination, do not teach, suggest or provide motivation to create a surface treatment or a coating with an enzymatically active organophosphorus hydrolase which is capable of exhibiting catalyzing activity in the surface treatment at one or more instances after the surface treatment has been formed with the enzymatically active organophosphorus hydrolase for greater than approximately 1 week. Independent claims 319 and 368 recite such limitations for a surface treatment and a coating, respectively. As noted on page 10 of the Office Action mailed May 18, 2007, neither Bonaventura nor Cheng specifically disclose that their enzymes are effective for more than one week in the substances described therein. The Examiner, however, surmises that a skilled artisan would believe the enzymes would be inherently so effective in the substances. Such conjecture is respectfully traversed. The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristics. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) MPEP 2112. As described at the MPEP 2112 IV:

> To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted)

In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics necessarily flows from the teachings of the applied prior art. *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990, emphasis added); MPEP 2112.

The Examiner has not met this burden. As noted in the response to the prior Office Action mailed May 18, 2007, Cheng teaches that activity of enzymes in the presence of the

substances described therein is significantly reduced (up to 50%) after a 24 hour period (*see* Fig. 3 and the first partial paragraph on page 461 of Cheng). In the previous Office Action, the Examiner refutes such an argument by citing Cheng as teaching the organophosphorus acid anhydrolase taught therein "… can be stable for at least one year when dried in the presence of a buffer, 10% of the activity was retained after a year. Moreover, when dried in the presence of trehalose, 100% of the activity was retained after a year." (prior Office Action, page 10). Applicant notes that the reference of the year time period taught by Cheng refers to the enzyme being freeze-dried for a year and NOT to the enzyme being constituted in a liquid medium (i.e., water and/or ammonia carbonate) for a year. Cheng only teaches testing enzyme activity immediately after and only up to 24 hours after constituting the freeze-dried enzyme in a liquid medium, which is a significantly shorter amount of time than a time frame of greater than 1 week as recited in claims 319 and 368. Based on such a distinction, it is asserted that it would not be obvious to one skilled in the art to infer the enzyme activity retention taught in Cheng may be sustained in a liquid medium after a time period of greater than 1 week. Such an assertion is further supported by Cheng's teachings that the activity of enzymes added to the substances listed in Table 2 and Fig. 3 is significantly reduced after a 24 hour period.

Though the Examiner does not reiterate the previous Office Action's argument regarding U.S. Patent No. 4,155,887 to Heston (hereinafter referred to as "Heston"), the Examiner states that all claims are rejected for the same reasons in the present Office Action. Applicant reiterates the following arguments regarding Heston, which Examiner has failed to respond to in the present Office Action.

Applicant further notes teachings in Cheng cited by the Examiner are specific to the use of a freeze-dried enzyme reconstituted with water and, in some cases, further with ammonia carbonate. Such liquid media is vastly different than coating media, such as paint, and, thus, it is asserted that it would not be obvious to one skilled in the art to infer the aforementioned activity retention in a coating based on such teachings. In response to such an argument, the Examiner cites Heston as teaching trehalose as a component used in paints and surmises from such teaching "… paints comprising organophosphorus hydrolase would be predicted to be 100% active for at least a year. In addition, paints not comprising trehalose would be expected

to retain 10% activity for at least a year." (previous Office Action, page 10). The Examiner's interpretation of Heston's teachings as well as the conjecture based thereon are traversed.

Heston teaches employing a polysaccharide containing stabilizer blend in latex paint compositions containing porous solids to eliminate shrinkage of the paint composition on storage without sacrificing application characteristics (column 2, lines 44-48). Heston further teaches the stabilizing blend "… contains from about 20 to about 65% by weight of saccharide … (column 3, lines 7-9), which is preferably "… produces by the fermentation of one or more carbohydrates with bacteria of the genus xanthomonas." (column 3, lines 12-15). Although Heston cites trehalose as a suitable carbohydrate source material for preparing the polysaccharide stabilizer (column 3, lines 24-31), there is no teaching or suggestion within Heston that trehalose is a component of the latex paint taught therein as erroneously cited by the Examiner. Furthermore, even if (for the sake argument) Heston taught trehalose as a component of paint, such a teaching would not lend one skilled in the art to believe that the incorporation thereof may yield 100% enzyme activity retention based on the teachings of Cheng. In particular, Cheng's reference to trehalose affecting enzyme activity is limited to the enzyme dried in the presence of trehalose and stored for a year. There is no teaching or suggestion within Cheng that incorporating trehalose in a liquid medium constituting the enzyme taught therein affects the activity retention of the enzyme. Furthermore, as noted above, there is no teaching or suggestion within Cheng that the enzyme activity retention disclosed therein could be sustained for after a time period of greater than 1 week after a liquid medium is formed with the enzyme.

For at least the reasons stated above, Bonaventura and Cheng, taken alone or in combination, provides teaching suggestion, or motivation to render the limitations of rejected claims obvious.

The Examiner further argues that "what is well-known in the art" or various references may be combined with Bonaventura and Cheng to establish the obviousness of certain claims, as summarized below.

Claims 81 and 251 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bonaventura and Cheng in view of pages 6, 12-19, 127, 165, and 288-290 of *Paints, Coatings, and Solvents, Second Completely Revised Edition* by Stoye et al. (hereinafter referred to as "Stoye"), for reasons explained in the prior actions, maintaining a prior rejection.

The reasons for the prior rejection stated in the Office Action mailed February 27, 2008 are shown below:

> Claims 81 and 251 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bonaventura et al, 1999 and Cheng et al, 1999 in view of Stoye et al, 1993. The combination of Bonaventura and Cheng is described above. Said combination does not teach multi-pack coatings wherein only one layer comprises the organophosphorus hydrolase. As explained in the Action of January 12, 2006, Stoye et al teach top coatings included in multipack coatings (pg 16-19; Fig 2.1). It would have been obvious to a person of ordinary skill in the art to include the organophsosphorus hydrolase of Cheng et al in only the top coating of a multipack coating. Motivation to do so derives from the desire to save money by including the organophosphorus hydrolase only in the top layer, where its activity would most efficiently degrade organophosphates. The expectation of success is high, as top coatings and coatings containing active organophosphorus hydrolases are both known in the art. Therefore, Claims 81 and 251 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Bovaventura et al, 1999 and Cheng et al, 1999 in view of Stoye et al, 1993.

The Examiner has <u>failed</u> to respond to the Applicants previous arguments regarding Stoye, and those arguments are maintained and summarized with additional arguments described below in regards to combination of Bonaventura and Cheng with Stoye and other cited references.

Although Stoye was not specifically cited against claims 1, 319, and 368, it is noted that Stoye does not teach or suggest a coating with an enzymatically active organophosphorus hydrolase. As such, Stoye cannot be used to overcome the deficiencies of Bonaventura and Cheng to teach the limitations of those claims. Therefore, claims 1, 319, and 368, as well as claims 81 and 251, are patentably distinct over the cited art.

Claims 23, 25-27, 65-66, 226, 229, 230, 233-235, 326 and 309 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bonaventura and Cheng in view of what was well-known in the art: that OPH activity is regulated by Co^{2+} (claim 23), that fragments and fusion proteins having activity are useful (claims 25-27), that enzymes can be targeted to cells using fusion proteins with binding motifs (claims 65-66), that the compounds of claim 226, 230, 233-235, and 326 can be used as pigments (claim 226, 229, 230, 230, 233-235, 326), that isolated enzymes can be stored in 50% glycerol (309).

Claims 20 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bonaventura and Cheng in view of Mulbry et al, 1993 (referred to herein as "Mulbry"), wherein Mulbry is said "to teach OPH encoded by the Flavobacterium opd gene. It would have been obvious to a person of ordinary skill in the art to substitute the OPH of Cheng et al. with the OPH of Mulbry et al. Motivations to do so derives from the desire to make and use a paint comprising an OPH. The expectation of success is high, as coatings comprising OPH were known in the art."

Applicant notes that the correct year of publication for the cited Mulbry reference is 1989, not 1993.

Claims 99 and 100 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bonaventura and Cheng in view of Burlant et al, 1969 (referred to herein as "Burlant"). The Examiner acknowledges Bonaventura et al and Cheng et al does not teach a paint comprising a binder that forms a film by cross-linking. The Examiner argues that "Burlant et al teach binder that forms a film by cross-linking. It would have been obvious to a person of ordinary skill in the art to incorporate one or more binders of Burlant et al into the paint rendered obvious by Bonaventrua et al and Cheng et al. Motivation to do so derives from the desire to make and use a paint having a wear resistant surface. The expectation of success is high, as paints comprising binders were known in the art."

Claims 133-135 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bonaventura and Cheng in view of Panush et al, 1986 (referred to herein as "Panush"). The

Examiner acknowledges Bonaventura et al and Cheng et al does not teach a paint comprising a thermoplastic binder. The Examiner argues that "Panush et al teach paint comprising thermoplastic binders. It would have been obvious to a person of ordinary skill in the art to incorporate one or more thermoplastic binders of Panush et al into the paint rendered obvious by Bonaventrua et al and Cheng et al. Motivation to do so derives from the desire to make and use a paint having a higher adhesion to metal. The expectation of success is high, as paints comprising thermoplastic binders were known in the art."

Claims 239-242 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bonaventura and Cheng in view of Waldron et al, 1992 (referred to herein as "Waldron"). The Examiner acknowledges Bonaventura et al and Cheng et al does not teach a paint comprising a biocide. The Examiner argues that "Waldron et al teach paint comprising biocide. It would have been obvious to a person of ordinary skill in the art to incorporate the biocide of Waldron et al into the paint rendered obvious by Bonaventrua et al and Cheng et al. Motivation to do so derives from the desire to make and use a paint having an activity to inhibit microbial growth. The expectation of success is high, as paints comprising biocides were known in the art."

Claims 321, 345-347 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bonaventura and Cheng in view of Krumhar et al, 1992 (referred to herein as "Krumhar"). The Examiner acknowledges Bonaventura et al and Cheng et al does not teach a paint comprising a colormetric pH indicator. The Examiner argues that "Krumar et al teach paint comprising the colometric pH indicator Neutral Red. It would have been obvious to a person of ordinary skill in the art to incorporate the colormetric pH indicator Neutral Red of Krumhar et al into the paint rendered obvious by Bonaventrua et al and Cheng et al. Motivation to do so derives from the desire to make and use a paint having sensitivity to environmental pH, which would be advantageous in maintaining OPH activity. The expectation of success is high, as coatings colormetric pH indicators were known in the art."

Claims 348-350 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bonaventura and Cheng in view of Gillette, 1995 (referred to herein as "Gillette"). The Examiner acknowledges Bonaventura et al and Cheng et al does not teach a paint comprising a

fluorimetric pH indicator. The Examiner argues that "Gillette et al teaches several fluorimetric pH indicators. It would have been obvious to a person of ordinary skill in the art to incorporate the fluorimetric pH indicators of Gillette into the paint rendered obvious by Bonaventrua et al and Cheng et al. Motivation to do so derives from the desire to make and use a paint having sensitivity to environmental pH, which would be advantageous in maintaining OPH activity. The expectation of success is high, as coatings comprising colormetric pH indicators were known in the art."

Claims 327 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bonaventura and Cheng in view of Pusch et al, 1985 (referred to herein as "Panush"). The Examiner acknowledges Bonaventura et al and Cheng et al does not teach a paint comprising a camouflage pigment that reduces detection by infrared. The Examiner argues that "Pusch et al teach paint comprising a camouflage pigment that reduces detection by infrared. It would have been obvious to a person of ordinary skill in the art to incorporate the camouflage pigment of Pusch et al into the paint rendered obvious by Bonaventrua et al and Cheng et al. Motivation to do so derives from the desire to make and use a paint having providing protections against detection by thermal imaging. The expectation of success is high, as paints comprising thermoplastic binders were known in the art."

It is noted that the assertions of "what is well known in the art," and the cited references Stoye, Mulbry 1989, Burlant, Panush, Waldron, Krumhar, Gillette, or Pusch, does not teach or suggest a coating with an enzymatically active esterase of Enzyme Commission number EC 3.1.8. As such, assertions of "what is well known in the art," and the cited references Stoye, Mulbry 1989, Burlant, Panush, Waldron, Krumhar, Gillette, or Pusch, cannot be used to overcome the deficiencies of Bonaventura and Cheng, alone or in combination.

Applicant challenges the Examiner's assertion of "what was well-known in the art" as the Examiner has failed to provide any reference citations in support of such an assertion, and as described below, relies on the specification for such teachings.

The motivations provided to combine Bonaventura and Cheng, alone or in combination with "what is well-known in the art" and additional cited references, are not found in the any of these assertions of "what is well-known in the art" or these references, but are described in the instant application. In regards to the rejections of claims based on "what is well known in the art: that OPH activity is regulated by Co^{2+}; that fragments and fusion proteins of enzymes having activity are useful; that enzymes can be targeted to cells using fusion proteins with binding motifs; that various compounds can be used as pigments; and that isolated enzymes can be stored in 50% glycerol, the Examiner does not provide a cited reference, as hindsight reliance of these teachings of the specification is being used to provide a motivation to combine these specification teachings with Bonaventura and/or Cheng. The Examiner actually cites the specification - the claims - in providing the motivation for the rejection of the very same claims by the statement "that the compounds of claim 226, 230, 233-235, and 326 can be used as pigments (226, 229, 230, 230, 233-235, 326)"! The Examiner has used imperishable hindsight in constructing these and all the obviousness rejections, as described in the MPEP at 2142:

> Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

This reliance on impermissible hindsight is used by the Examiner in citing the references of Stoye, Mulbry, Burlant, Panush, Waldron, Krumhar, Gillette, and Pusch as combinable with Bonaventura and Cheng. The motivation for use of a top coat in a multipack coating (Stoye), a Flavobacterium opd gene (Mulbry); a binder that cross-links in a film (Burlant), a thermoplastic binder in a paint (Panush), a biocide (Waldron), a colormetric indicator (Krumhar), a fluorometric indicator (Gillette), or a camouflage pigment that reduces detection by infrared (Pusch), are provided by the specification, and not these references alone or in combination with Bonaventura and/or Cheng. The Examiner has gone so far in using impermissible hindsight in constructing these obviousness rejections as to cite the specification regarding Gillette, rather than the teachings of Gillette itself. Has the Examiner has reviewed Gillette for

any teaching or motivation to combine with any other reference, or relied upon the specification's disclosure of the claimed invention for the motive to combine, and also has relied upon the teachings of the specification in constructing the motivation to combine Stoye, Mulbry, Burlant, Panush, Waldron, Krumhar, Gillette, and Pusch with Bonaventura and/or Cheng?

Further evidence of reliance of impermissible hindsight being used to construct these rejections is found in the use of Krumhar in a rejection. Applicant finds that Krumhar teaches that the colorimetric indicator system is suitable only for use in an anaerobic, sealed environment as described throughout Krumhar. For example, the Abstract describes:

> Packages....may be readily identified by placing therein a multi-component visual indicator system...which may be prepared aerobically and then placed into an anaerobic environment for use..."

The purpose of use for the colometric indicator system is again described at the Summary of the Invention, column 3, lines 39 to 43:

> The present invention comprises a system for visually detecting loss of package integrity of a sealed package due to the exposure of a sensor therein to oxygen after the package and sensor have been sealed under an inert atmosphere.

Modification of the Krumhar reference's colorimetric indicator system for a use other than one specifically designed for anaerobic environments as an oxygen indicator renders it unsuitable for its intended purpose, and thus, there is no suggestion or motivation to modify the Krumhar colorimetric indicator system for a coating or surface treatment of the instant invention that encompasses anaerobic uses. The only motivation to use a coating having a colometric indicator in aerobic environment comes from the specification, not Krumhar, as this reference teaches away from such modification.

For at least the reasons cited above, it is asserted that all the rejected claims are non-obvious relative to the cited references and what was asserted as "well-known" in the art.

Accordingly, based on the forgoing, removal of all the § 103(a) rejections is respectfully requested.

CONCLUSION

This response constitutes a complete response to all of the issues raised in the Office Action mailed March 27, 2009. In view of the amendments and remarks herein, Applicants assert that pending claims 1, 15-27, 65-67, 72-75, 79-89, 94-100, 102, 110-119, 121-135, 180-182, 217, 219-242, 251-255, 272, 309, 319-321, 323, 324, 326, 327, 343-356, 360-362, 365-373, 376-385, and 389-394 are in condition for allowance. If the Examiner has any questions, comments, or suggestions, the undersigned earnestly requests a telephone conference.

The Commissioner is authorized to charge any fees which may be required, or credit any overpayment, to deposit account no. 50-1085.

Respectfully submitted,

/C. Steven McDaniel/
C. Steven McDaniel
Reg. No. 33,962
Attorney for Applicant

Customer No. 62754
Date: September 28, 2009

OLYMPIC PREMIUM 72001 Series

OLYMPIC® Premium Interior Latex Flat

GENERAL DESCRIPTION

OLYMPIC® Premium Interior Latex Flat is recommended for use on properly prepared interior walls, ceilings, and interior trim.

RECOMMENDED SUBSTRATES

Concrete/Masonry Block
Ferrous Metal
Gypsum Wallboard-Drywall
Plaster
Wood

CONFORMANCE STANDARDS

AIM	Architectural Industrial Maintenance
CARB	California Air Resources Board
LADCO	Lake Michigan Air Directors Consortium
OTC	Ozone Transport Commission
SCQAMD	South Coast Air Quality Management District

DIRECTIONS FOR USE

Stir thoroughly before and occasionally during use. When using more than one can of the same color, intermix to ensure color uniformity.

Permissible temperatures during application:

Material:	50 to 90ºF	10 to 32ºC
Ambient:	50 to 90ºF	10 to 32ºC
Substrate:	50 to 90ºF	10 to 32ºC

APPLICATION INFORMATION

Application Method: Apply with a high quality brush, roller, paint pad, or by spray equipment. Where necessary, apply a second coat. Allow each coat to dry before applying the next coat.

Application Equipment: For smooth surfaces, use a polyester nylon brush or 3/16" - 3/8" nap roller cover. For textured surfaces, use a nylon brush or roller designed for this purpose. If applied by spray, back-brushing or back-rolling is recommended. For airless spray application, use tip size 0.015" - 0.021" and pressure range of 1500 - 2000 psi.

Thinning: No thinning is usually required. If necessary, thin with up to 1/4 pint (118 mL) of water per U.S. gallon (3.78L) of paint.

PRODUCT INFORMATION

Refer to the appropriate color formula book, automatic tinting equipment, and or computer color matching system for color formulas and tinting instructions.

72001	Ultra White (Also Base 1)
72002	White (Also Base 2)
72003	Base 3*
72005	Base 5*
72015	Black

*Must be tinted before use.

Some colors, drastic color changes, or porous substrates may require more than one coat to achieve a uniform finish.

PRODUCT DATA

PRODUCT TYPE:	Vinyl Acetate Ethylene Latex
SHEEN:	Flat: 0 to 5 (60º and 85º Gloss Meter)
VOLUME SOLIDS*:	38% +/- 2%
WEIGHT SOLIDS*:	55% +/- 2%
VOC*:	0 g/L (0 lbs./gal.)
WEIGHT/GALLON*:	11.6 lbs. (5.3 kg) +/- 0.2 lbs. (91 g)

*Product data calculated on 72001.

COVERAGE: One gallon (3.78 Liters) covers approximately 400 sq. ft. (37.2 sq. meters) on primed, smooth non-porous surfaces.

Wet Film Thickness:	4.0 mils
Wet Microns:	102
Dry Film Thickness:	1.5 mils
Dry Microns:	38

Coverage does not include variation due to application methods, surface porosity, and/or mixing.

DRYING TIME: Dry time @77ºF (25ºC); 50% relative humidity.

To Touch	1 hour
To Recoat:	4 hours
To Full Cure:	30 days

Drying times listed may vary depending on temperature, humidity, film build, color, and air movement.

WASHING INSTRUCTIONS: Wait at least 14 days after painting before cleaning the surface with a non-abrasive mild cleaner.
CLEAN UP: Wipe up spills immediately with a damp cloth or sponge. Wash brushes, rollers and other painting tools with soap and water immediately after use.
DISPOSAL: Contact your local environmental regulatory agency for guidance on disposal of unused product. Do not pour down a drain or storm sewer.
FLASH POINT: Over 200ºF (93ºC)

FEATURES / BENEFITS

Features	Benefits
Zero VOC, low odor	Paint as provided is free of volatile organic compounds
Environmentally preferred	Safer on the environment
Superior scrubbability	Withstands repeated cleaning
Excellent coverage & hide	Hides surface imperfections
Low spatter	Less clean up needed
Soap and water cleanup	Easy to clean up hands and tools

OLYMPIC® Premium Interior Latex Flat

GENERAL SURFACE PREPARATION

Surfaces to be coated must be dry, clean, sound, and free from all contamination including loose and peeling paint, dirt, grease, oil, wax, concrete curing agents and bond breakers, chalk, efflorescence, mildew, rust, product fines, and dust. Remove loose paint, chalk, and efflorescence by wire brushing, scraping, sanding, and/or pressure washing. Putty all nail holes and caulk all cracks and open seams. Sand all glossy, rough, and patched surfaces. Feather back all rough edges to sound surface by sanding. Prime all bare and porous substrates with an appropriate high quality latex primer. WARNING! If you scrape, sand, or remove old paint, you may release lead dust or fumes. LEAD IS TOXIC. EXPOSURE TO LEAD DUST OR FUMES CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a properly fitted NIOSH-approved respirator and prevent skin contact to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the USEPA National Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead. In Canada, contact a regional Health Canada office. Follow these instructions to control exposure to other hazardous substances that may be released during surface preparation.

CONCRETE/MASONRY BLOCK: Mortar should cure for at least 30 days and preferably 90 days prior to priming. Fill block with an appropriate block filler. Surfaces previously coated with water thinned cement-based paint must be prepared with extra care. If the material appears to be adhering tightly, a masonry sealer may be applied to seal the surface. Check adhesion by applying a piece of masking tape. If the sealer peels off and has loose particles, remove all chalking or crumbling material, re-seal and re-check adhesion.

FERROUS METAL: The surface must be cleaned thoroughly to remove any dust, rust, and surface contaminants, and then primed with a high quality latex primer.

GYPSUM WALLBOARD-DRYWALL: Nails or screws should be countersunk, and they along with any indentations should be mudded flush with the surface, sanded smooth and cleaned to remove any dust, then prime with a high quality latex primer prior to painting the substrate.

PLASTER: Plaster, hardcoat, skim coat, or other alkaline surfaces should be allowed to cure for at least 30 days prior to priming with a high quality latex alkali resistant primer.

WOOD: Unpainted wood or wood in poor condition should be sanded smooth, wiped clean, then primed. Any knots or resinous areas must be primed before painting. Countersink all nails, putty flush with surface, then prime with a high quality latex primer.

LIMITATIONS OF USE

FOR INTERIOR USE ONLY. Apply when air, product, and surface temperatures are between 50ºF (10ºC) and 90ºF (32ºC). Not recommended for use on floors or in high humidity areas. PROTECT FROM FREEZING.

PACKAGING

Quart (946 mL)
1-Gallon (3.78 L)
5-Gallon (18.9L)

Not all products available in all sizes.

SAFETY PRECAUTIONS

Before using the products listed in this publication, carefully read each product label and follow directions for its use. Please read and observe all the warnings and precautionary information on the product labels. Material Safety Data Sheets are available through our Sales Representative, Retailer or by calling (412) 492-5555.

Spray equipment must be handled with due care and in accordance with manufacturer's recommendations. High pressure injection of coatings into the skin by airless equipment may cause serious injury.

USE WITH ADEQUATE VENTILATION. KEEP OUT OF REACH OF CHILDREN.

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